IN THE CLAIMS

Please amend the claims as follows:

Claims 1-37 (Canceled).

Claim 38 (New): A method for designing a specification of a hardware and software system, comprising:

defining services and, for each service, use cases;

associating each use case with at least one departure state of the system, a user request, and, for each departure state, an arrival state of the system;

defining operations, in the course of which, for each state, a set of elementary operations corresponding to the system response during arrival in the state is defined;

specifying system architecture defining electronic control units and networks;

mapping elementary operations onto calculators;

and executing at least one of:

identifying data flows circulating on the networks as a function of the mapping; and

identifying a specification of the calculator interfaces as a function of the mapping.

Claim 39 (New): A method according to claim 38, wherein the mapping comprises, for each service, a choice among a plurality of mapping modes comprising:

mapping the service onto a single calculator,

master-slave mapping, in which a supplementary elementary operation of control of the single service activates, depending on a state of the service in which the system finds

itself, elementary operations of the service, the supplementary elementary operation being mapped onto one of the calculators,

distributed mapping, in which the elementary operations are distributed over at least two calculators and, onto each of the calculators, a supplementary elementary operation of control of the service is mapped and activates, depending on the state of the service in which the system finds itself, the elementary operations of the service mapped onto the calculators.

Claim 40 (New): A method according to claim 39, wherein the supplementary elementary operations are generated automatically with:

as inputs, all data necessary for calculation of transitions of a control automaton of the service whose states are the states of the service and the transitions are transformations, via an elementary operation, of the user's requests, and

as an output, a datum representing the state in which the service finds itself.

Claim 41 (New): A method according to claim 38, wherein, in the identifying data flows, a state of each data flow is determined relative to a given electronic messaging system:

free data, to be mapped into frames,

data already mapped into frames and circulating on the network, and such that the data are produced in the calculators in which the frame is produced and consumed in the calculators in which the frame is consumed, and

unused frame sites.

Claim 42 (New): A method according to claim 38, wherein, given a use case,

a performance constraint is imposed on the use case and on certain of the elementary operations executed in the arrival state of the use case,

a list of those executions of elementary operations, executions of drivers, writes and reads in the frames, taking into account of information by sensors and actuators, and frame transfer to a network that are implemented following mapping of the elementary operations is then automatically synthesized,

requirements of delay of execution and/or of response time of transmission, reading and writing frames, and execution of drivers and of elementary operations are then specified,

response times of sensors and actuators are indicated,

a fact that a performance constraint is satisfied for a mapping of the elementary operations is validated or requirements of delay of execution and/or of response time to satisfy the performance constraint are specified.

Claim 43 (New): A method according to claim 38, wherein if, for a service having at least two variants, the variants have shared elementary operations, then the elementary operations are automatically mapped onto the same calculators or calculator variants during mapping of one of the variants.

Claim 44 (New): A device for design of a specification of a hardware and software system, comprising:

means for defining services and, for each service, use cases;

means for associating each use case with at least one departure state of the system, a user request, and, for each departure state, an arrival state of the system;

means for defining operations, in the course of which, for each state, a set of elementary operations corresponding to the system response during arrival in the state is defined;

means for specifying system architecture defining electronic control units and networks;

means for mapping elementary operations onto calculators;

and at least one of:

means for identifying data flows circulating on the networks as a function of the mapping; and

means for identifying a specification of the calculator interfaces as a function of the mapping.

Claim 45 (New): A device according to claim 44, further comprising means for selecting a hierarchical description, selection of each selection means causing a different screen of the device to appear.

Claim 46 (New): A device according to claim 45, wherein, for at least one screen, the hierarchical description represents, at a first level of hierarchy, a plurality of services and, at a second level of hierarchy, a plurality of use cases for each service.

Claim 47 (New): A device according to claim 46, wherein, for at least one screen, each use case comprises an initial context or situation of the system, a user's request to the system, and a response of the system corresponding to a change of its state.

Claim 48 (New): A device according to claim 46, wherein, in at least one screen, states and associated state transitions are defined for each use case of a service.

Claim 49 (New): A device according to claim 44, wherein the states that function in modes transverse to common services are grouped in phases, each state is associated with one phase of the system, the set of formalized use cases represent all responses or absences of response of the system in all phases, these in total representing all combinations of modes of operation of a vehicle.

Claim 50 (New): A device according to claim 49, wherein each phase is composed of a set of combinations of modes of operation of the vehicle, the modes being transverse to the services and outside the direct control of the services.

Claim 51 (New): A device according to claim 45, wherein, for at least one screen, the hierarchical description represents a plurality of services at a first level of hierarchy and of phases of the service at a second level of hierarchy.

Claim 52 (New): A device according to claim 47, wherein, for at least one screen, the hierarchical description represents a plurality of services at a first level of hierarchy and of states of the service at a second level of hierarchy.

Claim 53 (New): A device according to claim 51, wherein, within the hierarchical description, a hierarchical level in a given state describes the elementary operations.

Claim 54 (New): A device according to claim 45, wherein, for at least one screen, mapping of elementary operations onto components represented in a synthetic view is effected.

Claim 55 (New): A device according to claim 54, containing, for at least one screen, a synthetic view representing an envelope of a component and each elementary operation that the component controls or instructs.

Claim 56 (New): A device according to claim 45, containing, for at least one screen, a synthetic view representing an envelope of a service and each elementary operation that the service comprises.

Claim 57 (New): A device according to claim 45, wherein, for at least one screen, at a first level of hierarchy, the hierarchical description represents the calculators of the system and, at a second level of hierarchy, elementary operations electronically monitored or controlled by each calculator.

Claim 58 (New): A device according to claim 57, wherein, for each screen, a hierarchical level represents, for each calculator, the services that are mapped at least partly onto the calculator.

Claim 59 (New): A device according to claim 57, wherein, for each screen, a synthetic view represents, for each calculator, the modes in which the calculator must function.

Claim 60 (New): A device according to claim 45, wherein, for at least one screen, a synthetic view represents at least one network and the components connected to it.

Claim 61 (New): A device according to claim 45, wherein, for at least one screen, at a first level of hierarchy, the hierarchical description represents the calculators of the system and, at a second level of hierarchy, for each calculator, the data frames are transported on buses to which the calculator and/or the electronic components directly connected to the calculator are connected.

Claim 62 (New): A device according to claim 45, wherein, for at least one screen, the hierarchical description represents the frames at a first level of hierarchy and, at a second level of hierarchy, for each frame, the data contained in the frames.

Claim 63 (New): A device according to claim 45, wherein, for at least one screen, a synthetic view represents components and/or networks and a projection of a service onto the components and/or networks.

Claim 64 (New): A device according to claim 45, wherein, for at least one screen, a hierarchical level describes, for each elementary operation, input and output interface data flows, and, for each data flow, a driver and the component and/or the elementary operation with which the data flow is exchanged.

Claim 65 (New): A device according to claim 45, wherein, for at least one screen, the hierarchical description represents, at a first level of hierarchy, a plurality of services and, at a second level of hierarchy, a plurality of service variants, for each service.

Claim 66 (New): A device according to claim 45, wherein, for at least one screen, the hierarchical description represents, at a first level of hierarchy, a plurality of electronic

components and, at a second level of hierarchy, a plurality of variants of electronic components, for each electronic component.

Claim 67 (New): A device according to claim 45, wherein, for at least one synthetic view, a selection of an element of the synthetic view by a pointing device gives access to a representation of the functioning of the element.

Claim 68 (New): A device according to claim 44, wherein, for a use case, given partial or complete mapping of the services, the set of elementary operations in the architecture and the set of data exchanged corresponding to execution of the use case are automatically identified.

Claim 69 (New): A device according to claim 44, wherein, for a use case, if a performance constraint is imposed on the use case, the set of elementary operations in the architecture, a set of frames exchanged, and a set of sensors necessary and/or a set of actuators activated are automatically identified, in such a manner as to assign respectively thereto specific constraints of delay of execution, of delay of transmission, of delay of activation, and/or to validate the constraints already imposed.

Claim 70 (New): A device according to claim 44, further comprising, for objects, hardware components and/or services offered to the client, a graphic representation comprising:

a contour representing the object,

representations of other objects with which the object communicates, and

representations of data exchanged with the other objects.

Claim 71 (New): A device according to claim 70, wherein, when the envelope represents a hardware component, data representations are effected for a service.

Claim 72 (New): A device according to claim 44, further comprising, for each bus, a representation of components that are connected directly thereto and, for components directly connected to at least two buses, for each of these at least two buses, associated with the component, an identifier of each other bus to which the component is directly connected.

Claim 73 (New): A device according to claim 72, wherein the identifier is a graphical element.

Claim 74 (New): A manufactured article comprising:

a computer storage means having a computer program for designing a specification of a hardware and software system, wherein the program comprises a code for execution of the method defined in claim 38.